

WHAT IS CLAIMED:

1. A hard surface cleaning composition for removing cooked-, baked- or burnt-on soils from cookware and tableware, the composition comprising a soil swelling agent and a spreading auxiliary and having a liquid surface tension of less than about 24.5 mN/m and a pH as measured in a 10% solution in distilled water of at least 10.5.

2. A composition according to claim 1 wherein the composition has a pH, as measured in a 10% solution in distilled water, from about 11 to about 14, preferably from about 12 to about 13.

3. A composition according to claim 1 wherein the composition has a reserve alkalinity of less than about 5, preferably less than about 4 and more preferably less than about 3.

4. A composition according to claim 1 wherein the composition comprises from about 0.05 to about 10%, preferably from about 0.1 to about 2% of surfactant selected from anionic, amphoteric, zwitterionic, nonionic and semi-polar surfactants and mixtures thereof.

5. A hard surface cleaning composition for removing cooked-, baked- or burnt-on polymerised grease from metallic, especially stainless steel cookware and tableware, the composition comprising a polymerised grease swelling agent and a spreading auxiliary and wherein the composition has a liquid surface tension of less than about 24.5 mN/m and a pH as measured in a 10% solution in distilled water of at least 10.5.

6. A hard surface cleaning composition for removing cooked-, baked- or burnt-on carbohydrate soils from cookware and tableware, the composition comprising a carbohydrate soil swelling agent and a spreading auxiliary and wherein the composition has a liquid surface tension of less than about 24.5 mN/m and a pH as measured in a 10% solution in distilled water of at least 10.5.

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7. A composition according to claim 6 wherein the soil swelling agent and spreading auxiliary are selected such that the hard surface cleaning composition displays an advancing contact angle on a polymerised grease-coated glass substrate at 25°C of less than about 20°, preferably less than about 10° and more preferably less than about 5°.
8. A hard surface cleaning composition for removing cooked-, baked- or burnt-on soils from cookware and tableware, the composition comprising a soil swelling agent and a spreading auxiliary and wherein the composition displays an advancing contact angle on a polymerised grease-coated glass substrate at 25°C of less than about 20°, preferably less than about 10° and more preferably less than about 5°.
9. A composition according to claim 8 wherein the composition has a soil swelling index of at least about 100%, preferably at least about 200% and more preferably at least about 500%.
10. A hard surface cleaning composition for removing cooked-, baked- or burnt-on soils from cookware and tableware, the composition comprising a soil swelling agent and wherein the composition has a soil swelling index of at least about 100%, preferably at least about 200% and more preferably at least about 500%.
11. A composition according to claim 10 wherein the spreading auxiliary is selected from organic solvents, wetting agents and mixtures thereof such that the liquid surface tension of the spreading auxiliary is less than about 30 mN/m, preferably less than about 28 mN/m, and more preferably less than about 26 mN/m.
12. A hard surface cleaning composition for removing cooked-, baked- or burnt-on soils from cookware and tableware, the composition comprising from about 10% to about 40%, preferably from about 12% to about 20% of organic solvent including from about 1% to about 15% of solvent acting as soil swelling agent and from about 7% to about

30% of solvent acting as spreading auxiliary and which includes at least about 3.5% of a water-miscible solvent and at least about 3.5% of a coupling solvent having limited miscibility in water.

13. A composition according to claim 12 wherein the spreading auxiliary comprises one or more organic solvent components selected from alcoholic solvents, glycols and glycol derivatives and mixtures thereof.

14. A composition according to claim 13 wherein the spreading auxiliary comprises a mixture of a fully water-miscible organic solvent and a coupling organic solvent having limited miscibility in water and wherein the ratio of water-miscible organic solvent to coupling organic solvent is in the range from about 4:1 to about 1:20, preferably from about 2:1 to about 1:6, more preferably from about 1.5:1 to about 1:3.

15. A composition according to claim 14 wherein the spreading auxiliary comprises a wetting agent having a liquid surface tension of less than about 30 mN/m, preferably less than about 28 mN/m and more preferably less than about 26 mN/m.

16. A composition according to claim 15 wherein the spreading auxiliary comprises an amine oxide wetting agent.

17. A hard surface cleaning composition for removing cooked-, baked- or burnt-on soils from cookware and tableware, the composition comprising a soil swelling agent, a coupling solvent having limited miscibility in water and a wetting agent and wherein the composition has a liquid surface tension of less than about 24.5 mN/m.

18. A hard surface cleaning composition for removing cooked-, baked- or burnt-on soils from cookware and tableware, the composition comprising an organic solvent system and a wetting agent, wherein the organic solvent system includes at least one solvent component acting as soil swelling agent and wherein the wetting agent is effective in

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lowering the surface tension of the solvent system to at least 1 mN/m less than that of the wetting agent.

19. A hard surface cleaning composition for removing cooked-, baked- or burnt-on soils from cookware and tableware, the composition comprising an organic solvent system and a wetting agent, wherein the organic solvent system includes at least one solvent component acting as soil swelling agent and at least one coupling solvent having limited miscibility in water and wherein the wetting agent is effective in lowering the surface tension of the solvent system to at least 1 mN/m less than that of the wetting agent.

20. A composition according to claim 19 wherein the hard surface cleaning composition has a liquid surface tension of less than about 24 mN/m and preferably less than about 23.5 mN/m.

21. A composition according to claim 20 wherein the soil swelling agent is selected from organoamine solvents inclusive of alkanolamines, alkylamines, alkyleneamines and mixtures thereof.

22. A composition according to claim 21 wherein the composition has a polymerised grease removal index of at least 25%, preferably at least 50%, more preferably at least 75%.

23. A hard-surface cleaning composition for removing cooked-, baked-, or burnt-on food soil from cookware and tableware, the composition comprising an organic solvent system including at least one solvent component acting as soil swelling agent and having a liquid surface tension of less than about 27 mN/m, preferably less than about 26 mN/m, more preferably less than about 25 mN/m, the composition being in the form of a liquid or gel having a pH of greater than about 10.5, preferably greater than about 11.

24. A hard-surface cleaning composition for removing cooked-, baked-, or burnt-on food soil from cookware and tableware, the composition comprising an organic solvent system comprising a plurality of solvent components including at least one solvent component acting as soil swelling agent in levels such that the solvent system has an advancing contact angle on polymerised grease-coated glass substrate of less than that of corresponding compositions containing the individual components of the solvent system.

25. A composition according claim 24 in the form of a shear thinning fluid having a shear index (n) from about 0.3 to about 0.7, preferably from about 0.4 to about 0.6 and a consistency index from about 0.20 to about 0.15 Pa.sⁿ.

26. A composition according claim 25 wherein the composition sprayed on a vertical stainless steel surface has a flow velocity less than about 1 cm/s, preferably less than about 0.1 cm/s.

27. A composition according to claim 27 further comprising a thickening agent selected from synthetic smectite type clays, natural gums and mixtures thereof.

28. A hard-surface cleaning composition for removing cooked-, baked-, or burnt-on food soil from cookware and tableware, the composition comprising an organic solvent system including at least one solvent component acting as soil swelling agent and a synthetic smectite type clay thickening agent having an average platelet size of less than about 100 nm.

29. A composition according to any preceding claim wherein the composition comprises an organic solvent system including at least one solvent component acting as soil swelling agent and wherein the organic solvent system is selected from alcohols, amines, esters, glycol ethers, glycols, terpenes and mixtures thereof.

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30. A composition according to claim 29 wherein the organic solvent system is selected from organoamine solvents, inclusive of alkanolamines, alkylamines, alkyleneamines and mixtures thereof; alcoholic solvents inclusive of aromatic, aliphatic (preferably C₄-C₁₀) and cycloaliphatic alcohols and mixtures thereof; glycols and glycol derivatives inclusive of C₂-C₃ (poly)alkylene glycols, glycol ethers, glycol esters and mixtures thereof; and mixtures selected from organoamine solvents, alcoholic solvents, glycols and glycol derivatives.
31. A composition according to claim 29 wherein the organic solvent comprises organoamine (especially alkanolamine, more especially 2-aminoalkanol) solvent and glycol ether solvent, preferably in a weight ratio of from about 3:1 to about 1:3, and wherein the glycol ether solvent is selected from ethylene glycol monobutyl ether, diethylene glycol monobutyl ether, ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, diethylene glycol monomethyl ether, diethylene glycol monoethyl ether, propylene glycol monobutyl ether, dipropylene glycol monobutyl ether, ethylene glycol phenyl ether and mixtures thereof.
32. A composition according to claim 29 wherein the glycol ether is a mixture of diethylene glycol monobutyl ether and propylene glycol butyl ether, preferably in a weight ratio of from about 1:2 to about 2:1.
33. A composition according to claims 29 wherein the organic solvent has a volatile organic content above 1 mm Hg of less than about 50%, preferably less than about 20%, more preferably less than about 10%.
34. A composition according to claim 29 wherein the organic solvent is essentially free of solvent components having a boiling point below about 150°C, flash point below about 50°C, preferably below 100°C or vapor pressure above about 1 mm Hg.

35. A composition according to claim 34 in the form of a dishwashing pretreatment composition.
36. A composition according to claim 35 in the form of an automatic dishwashing detergent composition.
37. A composition according to claim 35 additionally comprising a salt having a divalent cation, especially magnesium.
38. A composition according to claim 35 additionally comprising a solvent odor masking perfume or perfume base.
39. A composition according to claim 38 wherein the perfume or perfume base comprises at least 0.001% by weight of an ionone or mixture of ionones.
40. A composition according to claim 39 wherein the ionone or mixture of ionones is selected from natural containing ionone materials such as mimosa, violet, iris, orris and mixtures thereof.
41. A composition according to claims 38 wherein the perfume or perfume base additionally comprises a musk having a boiling point of more than about 250°C.
42. A composition according to claim 38 wherein the perfume or perfume base additionally comprises a high volatile perfume component or mixture of components having a boiling point of less than about 250°C.
43. A composition according to claim 35 additionally comprising a cyclodextrin malodor-control agent.

44. A hard-surface cleaning composition for removing cooked-, baked-, or burnt-on food soil from cookware and tableware, the composition comprising an organic solvent system including at least one solvent component acting as soil swelling agent and a cyclodextrin malodor-control agent.

45. A method of removing cooked-, baked- or burnt-on soils from cookware and tableware comprising treating the cookware/tableware with a hard surface cleaning composition according to any of claim 1.

46. A method of removing cooked-, baked- or burnt-on polymerised grease soils from metallic cookware and tableware comprising treating the cookware/tableware with a hard surface cleaning composition according to claim 1.

47. A method of removing cooked-, baked- or burnt-on carbohydrate soils from metallic cookware and tableware comprising treating the cookware/tableware with a hard surface cleaning composition according to claim 1.

48. A method according to claim 45 comprising the step of pre-treating the cookware/tableware with the hard surface cleaning composition prior to manual or automatic dishwashing.

49. A method of removing cooked-, baked- or burnt-on soils from cookware/tableware comprising pretreating the cookware/tableware with a hard surface cleaning composition having a soil swelling index of at least 100%, preferably at least 200%, more preferably at least 500%, prior to manual or automatic dishwashing.

50. A method according to claim 44 comprising the step of pre-treating the cookware/tableware with the hard surface cleaning composition and covering the pre-treated cookware/tableware with cling film for a time sufficient to promote swelling of the soil prior to manual or automatic dishwashing.